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COTTON PRICE QUOTATIONS IN DESIGNATED MARKETS

UNITED STATES DEPARTMENT OF AGRICULTURE
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SUMMARY

A study of cotton price quotations of uncompressed mixed-quality lots of cotton was made in 8 designated markets during the 1953-54 season for the purpose of determining the accuracy and reliability of these quotations and to inspect possibilities for their improvement. The quotations, which are issued in 14 designated markets by committees made up of local members of a voluntary trade organization known as the Cotton Exchange, provide a means for establishing premiums and discounts for the Government cotton loan to producers, for the settlement of futures contract, and as indexes of spot cotton values in markets throughout the Cotton Belt.

The quoted prices were compared with prices actually paid for the cotton in 8 designated markets--Augusta, Atlanta, Memphis, New Orleans, Houston, Dallas, Lubbock, and Fresno. The data were grouped over 3 short periods of time to represent early season, midseason, and late season sales. Average divergences between prices and quotations for any one period were considered representative of divergences for typical days within that period.

During the 1953-54 season, quotations on the average were in reasonably close accord with prices at all 8 markets. Seasonal average divergences of quotations from prices (a point = one hundredth of a cent) were: Dallas, 1 point; Lubbock, 2 points; Houston, 6 points; Memphis, 9 points; New Orleans, 12 points; Atlanta, 13 points; Fresno, 15 points; and Augusta, 21 points.

Seasonal averages, however, as indicators of the quality of performance by a committee can be misleading.

In terms of the level of accuracy of the quotations as related to the scatter of prices, volume of data available, and consistency of results throughout the season, quotations and prices were in somewhat closer agreement at Atlanta, Dallas, and Houston than at other markets.

At Augusta, Lubbock, Memphis, and New Orleans, quotations agreed closely with prices paid except for disparities during one portion of the season. The disparities were chiefly in connection with the higher prices paid for large lots than for small lots. At Lubbock and New Orleans, in particular, quotations conformed very closely to prices in 2 of the 3 parts of the season when data were collected, but in all 4 markets the overall caliber of the quotations service was very satisfactory.

Quotations at Fresno did not conform to prices as well as quotations in the other markets studied, even though for the season as a whole the divergence was only 15 points. During the early period of the season, quotations were 52 points below prices and in the late part of the season quotations were 18 points above prices. Although the scatter of prices during each period was relatively narrow, compared with that at most other markets, quotations generally registered a distinct bias in one direction or another from the level of prices. At the time prices were collected in 1953-54, Fresno had recently become a designated market and the committee

was faced with the added problem of developing methods and procedures for servicing the quotations. Indications are that the quotations service in this market has greatly improved since that time.

Such observations are in no way intended to indicate any direct established order or rank between markets as to proficiency in establishing spot quotations. The study applied to only one season and the conditions existing at that time.

Wide variations commonly were found between the prices and quotations for individual lots; some lots sold at prices considerably in excess of quoted prices while others sold at sizable discounts. Spreads of 400 points or more among prices paid for similar qualities of cotton were found in most of the markets studied. Prices were the most widely scattered at Atlanta but at Houston, Dallas, and Fresno they had a rather erratic pattern. By comparison, prices for like qualities of cotton at Lubbock and New Orleans varied within ranges only one-half as great as that found at Atlanta. Factors contributing to the rather wide spreads of individual lot prices, after adjustment for differences in quality, included the payment of premiums for cotton grouped into large lots or the discounting of lots of 10 bales or less, the different market positions of dealers, and lack of agreement among traders as to quality.

On the whole the performance of the quotations committees, as appraised during this study, reflected great credit to the cotton trade and the cotton exchanges.

Department representatives met with each of the 14 quotations committees and with a representative cross section of individual dealers for the purpose of obtaining suggestions and criticisms regarding the quotations service. Most comments received from individual dealers as well as from committees reflected confidence in the accuracy and reliability of designated market quotations. However, they made some constructive suggestions relative to changes in regulations or procedures.

The most frequent suggestion was that the base quality be changed from Middling 15/16-inch to Middling 1-inch or a longer length. This suggestion became an actuality when the futures exchanges modified their basis of trading to Middling 1-inch beginning with the October 1956 contract.

Another suggestion from the committees and individuals was that a market should not be required to quote prices for qualities never handled in the particular market. At a meeting in April 1956 between representatives of the interested exchanges and the Department, however, cotton trade members present decided that the present policy of having each market quote all grades of a wide range of staples should be continued. In fact, the range of qualities quoted by several markets was broadened rather than restricted.

COTTON PRICE QUOTATIONS IN DESIGNATED MARKETS

By Joe H. McLure and Wallace L. Ashby 1/

THE NATURE AND IMPORTANCE OF COTTON PRICE QUOTATIONS IN DESIGNATED MARKETS

The official spot cotton price quotations are designed to represent market values of various grades and staple lengths of uncompressed cotton sold in mixed quality lots located in warehouses in 14 designated markets. The markets are: Atlanta, Augusta, Charleston, Dallas, Fresno, Galveston, Greenville, Greenwood, Houston, Little Rock, Lubbock, Memphis, Montgomery, and New Orleans. 2/ At each designated market the local cotton exchange maintains a special committee of members for the purpose of determining such market information. Although these quotations apply particularly to cotton grown in the area in which the market is located, each committee is required to quote all grades represented in the official standards for upland cotton and most staple lengths commonly produced in the area.

These 14 markets have been designated by the Secretary of Agriculture after being found suitable under the U. S. Cotton Futures Act. The Department of Agriculture has the responsibility under this Act of supervising the issuance of cotton price quotations in these markets in the interest of providing accurate and reliable quotations and for protecting the integrity of cotton transactions.

The proper determination of cotton quotations in the designated markets is of widespread importance to all phases of the cotton industry. Such quotations are used widely as indexes of cotton values. They provide the source of premiums and discounts for the establishment of Government loan rates, serve as a guide in the sale of Commodity Credit Corporation stocks, and are used for the settlement of futures contracts. They afford a yardstick in the sale of cotton by producers and for all other buyers and sellers throughout the raw cotton industry. In cotton fire losses the insurance adjustor has a readily accessible record of mixed-quality values for various locations. Thus, it is necessary for these quotations to be accurate and reliable.

Misconceptions as to the exact nature of these official cotton price quotations occasionally come to light. In the strict sense of the term, these are not true quotations in that they do not record actual prices for

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1/ Mr. McLure retired February 29, 1956; Mr. Ashby is a cotton marketing specialist with Market Organization and Costs Branch, Marketing Research Division.

2/ Lubbock, Fresno, Greenville, and Greenwood were not included in Cotton Daily Quotations until August 1, 1954. At the time of the study, however, in the 1953-54 season, both the Lubbock and Fresno markets had been designated and quotations from those markets were being released in various reports other than the one named above. Designation of the Greenville and Greenwood markets did not become effective until August 1, 1954.

specific transactions. Instead, they are the best considered judgment of informed groups of cotton dealers as to the market values of specified qualities of cotton based on a variety of information. In actual practice prices for lots of cotton of like quality often vary widely during the course of a day's trading, for causes unrelated to change in price level. For example, prices may be affected solely by the number of bales included in the lots, with the larger lots frequently bringing higher prices than the smaller lots. The official quotations, therefore, are approximated prices which might be described as the modal or the most commonly occurring prices for lots of average sizes.

PURPOSE AND GENERAL PLAN OF STUDY

Objectives of study were: (1) To measure the extent to which official price quotations in selected markets conformed to prices actually paid for cotton sold in lots of mixed-quality, and (2) to obtain suggestions and recommendations for improving the quotations service from the 14 committees issuing these quotations and from a representative cross section of dealers in each market.

Representative data on actual prices paid in mixed-quality transactions were collected and then compared with the calculated prices of the lots as based on quotations for the particular qualities involved. Eight markets were selected for study: Augusta, Atlanta, Memphis, New Orleans, Houston, Dallas, Lubbock, and Fresno. Firms in these markets cooperated by furnishing prices paid for mixed-quality lots, and allowing a Government classer to assign grade and staple classification to the particular lots for which prices were obtained. This classing procedure was necessary since an individual bale class was not available for many lots at time of visit. It also served to smooth out differences in appraisal of cotton that might have occurred between the various cooperating firms. At Lubbock and Fresno this classing procedure was not necessary. There the Government's Smith-Doxey classification was already available for all lots inasmuch as firms in these two markets accept this classification in their purchases of mixed-quality lots.

Representatives of the Department collected price and classification data on three occasions during the 1953-54 season. The first collection of data was made in October 1953 and covered transactions mainly during the last half of September and early part of October. This collection was expected to represent early-season transactions. The second or midseason collection of data was made in December and covered transactions extending over a 3- or 4-week period before the time of that visit. The final or late-season collection of price and quality data was made in February 1954.

The number of firms furnishing data varied from 4 in Atlanta to 28 in Memphis (table 1). Volume of transactions for which data were obtained varied considerably among the markets, generally in proportion to the size of the market. Relatively large volumes of data, however, were obtained at

Dallas, Lubbock, and Fresno where trading practices favored the assembly of price information.

Table 1.--Number of cotton firms from which prices and quality data for mixed-lot transactions were obtained and number of transactions and bales involved, by markets, season 1953-54

Market	Cotton firms furnishing data	Transactions included	Quantity of cotton involved
	Number	Lots	Bales
Augusta	6	31	1,345
Atlanta	4	55	1,519
Memphis	28	226	11,463
New Orleans	9	93	4,004
Houston	16	124	6,607
Dallas	24	205	14,630
Lubbock	26	238	13,179
Fresno	25	412	33,391
Total	138	1,384	86,138

Toward the close of the season, representatives of the Department met with quotations committees in all 14 designated markets to observe methods of operation, obtain information on operating practices, and soliciting suggestions on possibilities for improving the quotations service. At the same time, individual firms also were visited to obtain their opinions and suggestions regarding the quotations.

MECHANISM OF QUOTING PRICES IN DESIGNATED MARKETS

In each designated market, a local organization is chartered under the laws of the State and known as the Cotton Exchange. The Cotton Exchange is a voluntary trade organization composed of cotton merchants, brokers, and others of the cotton trade established for the purpose of promoting the interests of the local market, including the regulation of marketing practices among the members. Another function of a cotton exchange located in a designated market is the issuance of cotton quotations as required by the U. S. cotton futures legislation.

The quotations function at each market is handled by a quotations committee of the exchange, whose work consists of the daily determination of the proper spot-price for the various qualities of cotton in mixed-quality lots and the issuance of quotations representing these prices. The chairman or secretary of the committee usually takes the leadership in the quotation work.

During the 1953-54 season, quotations committees consisted of 3 members in 6 markets, 5 members in 6 other markets, and 6 members in the remaining 2.

Committees in most exchanges were appointed by the president of the exchange, while in others they were appointed by the board of directors of the exchange or by a vote of the exchange membership. Some of the exchanges attempted to balance the membership of the quotations committee as to large and small dealers, merchants and brokers, etc. Terms of office varied from 1 month in 1 market to 2 months, 3 months, 6 months, or 1 year at other markets. At 2 markets terms were indefinite. In a few markets terms were staggered to preserve continuity of action.

Committees at Houston and New Orleans held informal daily meetings. At Memphis, Greenwood, and Dallas the committees scheduled weekly meetings and all were subject to special meetings. Committees in the other markets did not meet at stated times, but gathered at the call of the chairman as need arose.

The responsibility of the local exchanges for the issuance of quotations is governed in several important phases by the United States cotton futures legislation and by regulations of the Secretary of Agriculture thereunder. The following is from section 27.97 of these regulations:

> "There shall be established and maintained in each bona fide spot market a competent quotations committee . . . , such committee shall impartially and carefully ascertain and publish on each business day the value of Middling cotton and of other grades of cotton represented by the official cotton standards of the United States . . . The committee shall cause its action to be communicated at once to each futures exchange and to the Service."

Other portions of these regulations give additional guidance to the quotations committees in carrying out their responsibilities. Secretaries of the exchanges usually serve also as secretaries of the quotations committees.

Exchange bylaws in only one or two instances attempt to define procedures for determining quotations. In general, procedures at committee meetings consist of the presentation of quotations or problems that have come to the attention of the chairman or other members, or have been suggested by an exchange member not on the committee.

Immediately after the close of the futures market each business day the committee, or a representative of the committee, determines the spot quotations for that market that day. The committee adjusts the quotation for the base grade up or down each day approximately in accordance with the change in the near-active month futures price unless there is a change in "basis" (the price difference between the local base and futures prices). Premiums and discounts for qualities other than the base grade and staple are not necessarily changed each day. 3/ Some premiums and discounts often go unchanged for a number of days or even for weeks.

3/ The base quality was Middling 15/16-inch at the time of study. On August 1, 1956, the base was changed to Middling 1-inch.

As soon as the quotations in each market are determined, they are transmitted by wire to the Memphis office of the Department where they are published in the Department's report, "Cotton Daily Quotations." By means of this report and other distributions, the price data are circulated widely.

Because of the importance of these quotations and the difficulty of their accurate determination, Federal legislation previously referred to requires the Department to exercise certain supervisory functions with respect to the issuance of quotations by the designated markets. A representative of the Department works closely with the quotations committees and visits the markets periodically to confer with them. Particular attention is paid to keeping prices related to actual trading values at all times in each market.

PROBLEMS AND DIFFICULTIES OF ESTABLISHING ACCURATE QUOTATIONS

In their efforts to establish accurate quotations for their respective markets, the quotations committees in spot markets have a much more difficult task than is generally known. Service on a committee carries no financial remuneration. Ordinarily those who serve already are faced with a burdensome work schedule as dealers or brokers. On the whole, the caliber of committee members and the operations of committees reflect great credit to the trade and the exchanges, although occasionally questions or complaints arise concerning the accuracy of some of the quotations.

The use of mixed-lot transactions in determining quotations for individual qualities of cotton presents difficulties because it is not always possible to break down the round-lot price to ascertain prices of individual qualities. The committees, however, in 12 of the 14 markets expressed their approval of mixed-lot transactions as the basis for quotations. In the other two markets the committees felt that greater attention should be given to prices paid by mills for even-running lots of cotton.

Transactions in spot markets, unlike the futures markets, are usually strictly private negotiations. There is neither public record nor a registering of sales whereby an authentic average might be compiled.

Another difficulty is that each quotations committee must quote from 168 to 312 separate grade and staple combinations of cotton daily. In fact, the 14-market quotations together cover a total of about 336 qualities. At each market, some qualities quoted are seldom, if ever, found in actual transactions. During dull periods even the more common qualities may not appear regularly. Yet each day quotations must be made for all qualities.

Although quotations are based on official standards for grade and staple, opinions differ at times as to grade, staple, or character and these differences contribute to some of the variations in prices. All committees, however, reported that lack of agreement between members usually revolved around price considerations rather than classification.

The actual cotton comprising mixed-quality purchases made by central market firms usually is not located in the central market at the time the purchase is made. Instead, it is located at outlying country markets or in small towns within the marketing area of the central market. When transactions cover cotton at other locations or involve terms or conditions different from those specified in quotations, then all appropriate adjustments must be made for prices to be comparable to official quotations.

This situation contributes to some scatter in prices even after recognizable adjustments are made. Among the large number of country markets within a central market territory, pronounced differences exist in size, facilities, number and type of dealers, and general competitive conditions which, in turn, influence prices paid.

The base quality in the futures market and in the designated markets at the time of the study was Middling 15/16-inch. In most of the 14 markets the base quality was not commonly found.

COLLECTION OF DATA

Comparisons of actual prices for mixed lots with quoted prices for such lots do not disclose specific information on accuracy of quotations for individual qualities. Measurement was confined, therefore, to the overall conformity between actual prices and quoted prices for those qualities represented in the sample.

No way was found by which objective and factual data on actual prices applicable to specific qualities could be obtained. Mixed-quality lots are bought almost exclusively on a round-lot price.

Even when the "basis" sheet used in the transaction is available, individual quality prices often cannot be established because of price discretions given buyers for character, lot size, or immediate need for specific qualities of cotton. Moreover, the qualities assigned by the buyer of the lot may not agree with the firm's final class nor with the classification assigned by the Government classer. The few single-bale transactions which were encountered were omitted from the data because they were not typical and did not actually qualify as mixed lots.

Samples of mixed lots generally are not kept intact in classing rooms for any length of time but are distributed soon after classing into lots of even-running quality. This practice limited available samples usually to lots being handled at time of visit. Where samples were available in volume, some represented lots purchased a week or so earlier at the more distant locations, and others were bought only a day or two before from local sources. Although this situation prevented selection of price information for specific dates, it contributed to a desirable random selection of lots for the particular period of the season.

Prices obtained in a given market applied to purchases made at various locations within the market territory. Adjustments of country prices to the level of price for the market proper were based on the best available information as to differentials in freight and other costs. Methods used in location adjustments varied somewhat between markets but largely followed the pattern used or recommended by leaders within each market. In Augusta, Lubbock, and Fresno prices obtained did not require adjustment for location. In Atlanta, Memphis, and Dallas location differentials as established for Government loan cotton were used for making location adjustments. For New Orleans and Houston, country prices, f. o. b. cars, were adjusted by adding the inbound freight costs. Unlike other markets, where sales prices represented landed or interior f. o. b. car prices, cotton at Fresno usually was bought on gin yards. There 38 points was added to gin yard prices for transportation to, and receiving charges at, warehouses in order to make prices comparable with the price of cotton in warehouse at Fresno. 4/

Split grades customarily are recognized in transactions in central markets, including descriptions such as "plus" (known in the grade as "bright"), and Light Spot or Light Grey. In several markets, a sizable proportion of split grades was found by the classers reviewing the samples. Since split grade quotations for split grades were not published, the problem was met by estimating the quotation for a split grade as one-half of the difference between the quotations for the two full grades concerned. For example, if Strict Middling Spotted 1 inch was quoted at 90 points off and Strict Middling 1 inch at 90 on, the Strict Middling Light Spot 1 inch would be estimated as even.

Memphis and Fresno were the only markets of the 8 included in the study that issued quotations for staples longer than 1-1/16 inches and a considerable quantity of such staples was included in data for these 2 markets. At other markets, few bales of these staples were included in the sample data but in those cases the premium quoted at Memphis was followed.

The quantity and quality of cotton sold by producers in the 1953-54 season was restricted by the large entries of cotton into the Government loan. This condition limited to some extent the volume and nature of price data available both to quotations committees and for use in this study. Since the loan rates did not recognize split grades, farmers sold the split grades more freely than the regular grades if prior knowledge of classification was available from the Smith-Doxey class or some other source. Merchants paid substantially more for light spotted bales than for spotted bales of the same grade designation and staple length, for example, while the loan rate was the same. Producers at Lubbock made extensive use of Smith-Doxey classing in selecting which cotton to sell and which to place in the Government loan, as indicated by data collected in October 1953 when about 90 percent of the cotton sold was light spotted even though light spotted cotton was only a minor proportion of total ginnings at that time.

4/ One point is 1/100 cent per pound.

COMPARISON OF QUOTATIONS WITH PRICES PAID IN INDIVIDUAL MARKETS

Methods Used in Evaluating Quotations

As the first step, each lot of cotton for which price and quality data had been obtained was repriced to the quotations in effect at the market on the purchase date. Official quotations as published in the Department's "Cotton Daily Quotations" were used for this purpose and were applied quality by quality, as shown by Government classification, to the various bales of cotton comprising each individual lot. The calculated price of the lot so obtained was compared with the round-lot price paid by the firm, after adjustment in some cases for location. Explanations of the mechanics of analyses employed are included in the following discussion.

The divergence or spread was the amount by which quoted prices differed from actual prices. For each lot the actual price was subtracted from the calculated (quoted) price. If a quoted price was higher than the actual price paid, the divergence was shown as a plus quantity. When the quoted price was less than an actual price, the divergence was a minus figure.

The divergences were combined according to the three periods when information was collected. The periods represented transactions during early season, midseason, and late season. In view of the stability of futures prices and market levels in each period, fluctuations in average divergences during a given period chiefly represented variations about, rather than changes in, the quotation level.

Distribution of divergences between quoted and actual prices were charted by individual lots to provide a ready and convenient means of scanning their scatter. The degree of scatter of individual-lot divergences provides some indication of difficulties facing the quotations committees in arriving at the quotation that most nearly fits the pattern of prices in a market. A wide scatter indicates high variability of prices and, consequently, difficulty in arriving at accurate quotations. A more uniform set of prices, as illustrated by a narrower scatter, would probably mean less difficulty in determining the going price.

Charts showing distributions of divergences also included fitted distributions of prices centered at zero. These price distributions were developed from spreads among divergences within each period fitted to "normal" distributions and approximate the pattern of divergences that would have resulted from quotations exactly equaling prices.

Quotations are developed from prices and merely represent informed estimates of the averages of the numerous prices paid for each particular quality of cotton. The scatter among prices paid for a specific quality of cotton at a given time is independent of the quotation for that quality. Even if a quotation were perfect, that is, if the divergences of quotations

from prices averaged zero, the tendency for prices to be widely scattered would remain, with prices for many lots differing appreciably from the quotation.

Comparisons between distributions of divergences as they actually existed and those that would have resulted if quotations had been in balance with prices provide rule-of-thumb approximations of the overall quality of the quotations service in each market.

Size of lot affected the quotation-price relationship in many cases. The effect of size of lots on prices was measured by combining lots into various size groupings. The random selection of lots without regard to size presumably gave proper representation to the different sizes of lots. Divergences were not weighted by lot size.

Standard deviation of the divergences measures the scatter of the divergences around their average. Since the standard deviation of the individual-lot divergences is a reflection of price variability, the greater the spread among prices paid for similar qualities of cotton within a given period the larger will be the standard deviation, and the more difficult the problem of determining the correct quotation. On the other hand, a small standard deviation indicates less variability in prices and, in consequence, less potential difficulty in determining proper quotations. For example, about one-third of the lots will differ from the average price by more than one standard deviation. If the standard deviation for a period at a market was ±50 points, about two-thirds of the lots would have been within 50 points of the average, and one-third would have differed by more than ±50 points. Another market with a standard deviation of ±100 points would have experienced a price variability and scatter about twice as great as at the first market.

Relative divergence or "t" value, as used in the analyses to follow, is the ratio of an average divergence to its standard error. Converting average divergences to relative divergences ("t" values) permits direct comparisons of spreads developed from different numbers of lots or from differing degrees of price variability. The "t" value also provides an indication of whether or not an average divergence might have resulted from random variation in sample selection or was due to probable bias in the quotations. Use of such a relative measure was necessary to compensate for varying conditions and difficulties facing the several committees in their work. For example, average divergences at Atlanta were not directly comparable with those at Memphis because Atlanta handled much less cotton at prices which had much wider variations. Obviously, the Atlanta committee did not have an opportunity to be as precise as the Memphis committee. Use of relative divergences put each committee on an equal footing by eliminating two factors beyond their control--volume of trading and ranges of prices.

Probabilities associated with the "t" values vary with the number of divergences making up an average, but in general, the smaller the relative divergence the better the quotation. In this study, an average divergence

which could have occurred by change as frequently as one time in 20 or oftener, because of random variations in sample selection, has been classified as "good." Customarily, a relative divergence of 2.0 or smaller for 30 observations or more indicates no evidence of inaccuracy and all greater values point to increasing probability of bias. Since "t" values compensate for volume and scatter of prices, an instance where quotations differed from prices by 15 points at a very active market with narrow price range might yield a "t" value of 2.7, indicating some inaccuracy in the quotations. A small volume at a market with widely scattered prices and an average divergence of quotations from actual prices of 25 points might yield a "t" value of possibly 1.7, which would indicate a good job under trying conditions. In other words, the quotations service in that market during the period under discussion would be judged as satisfactory because, according to the criterion set up, no evidence of bias in the quotations was found. Relative divergences exceeding these limits have been indicated by asterisks in tables to follow.

Emphasis in the analysis has been on whether quotations accurately reflected prices during a given sampling period in any one market. No consideration has been given to the question of whether the quotations issued by a committee remained on the same level throughout the marketing season. A committee might, for example, quote prices 20 points too low during one period and, overcompensating, be 20 points too high during the next period. If the differences of 20 points in the respective periods were each within the limits of acceptability, the quotations service would be rated as satisfactory, even though the swing of 40 points from one period to the next might indicate a probable change in level.

Distribution of Price Divergences

As previously outlined, a divergence as discussed in this study represents the spread between the actual price paid for a lot of cotton and its calculated price in terms of existing official price quotations. Distributions of divergences for all lots sampled at each market reflect the extent of price variations within the market plus such shifts in the level of quotations as may have taken place during the season. Among a group of markets, usually the greater the scatter of prices at a market, the more difficult it would be for a quotations committee to pinpoint the average price of a given quality. Also, such distributions highlight the rather wide spreads in prices that customarily exist in any market, the extent of which are somewhat more severe than is generally realized.

Measured against the official quotations, the markets at Lubbock, New Orleans, and Augusta had considerably larger proportions of lots sold at prices that were within ±25 points of quoted prices than at other markets, the percentages being approximately 50, 42, and 39, respectively (table 2).

At four markets--Atlanta, Memphis, Dallas, and Fresno--from about 28 to 33 percent of sample lots were priced within this relatively narrow zone. At Houston only 24 percent of prices were within this interval. At all markets except Fresno, a relatively greater number of lots fell within the

±25-point interval than in any other 50-point interval. At Fresno the most commonly occurring divergence group was in the -26 to -75 points interval which included about 35 percent of all lots sampled.

As would be expected from the heavier concentration of prices about the midpoint, prices paid for individual lots at Augusta, Lubbock, and New Orleans, had a relatively small degree of scatter as contrasted with the other markets. At these 3 markets, no lots differed in price by more than 175 points from the quotations (fig. 1). At New Orleans and Lubbock prices of only about 17 and 12 percent, respectively, of lots diverged from quotations by more than 75 points. Other factors being equal, these comparatively narrow ranges of prices should help simplify the task of committees quoting those markets.

Table 2.--Frequency distributions of divergences of spot market quotations from prices paid for selected mixed-quality lots of cotton by firms in 8 designated markets, season of 1953-54

Class interval	Market area							
	Augusta	Atlanta	Memphis	New Orleans	Houston	Dallas	Lubbock	Fresno
	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.
-475 to -426..	--	--	--	--	--	--	--	0.2
-425 to -376..	--	--	--	--	--	0.5	--	--
-375 to -326..	--	--	--	--	--	.5	--	--
-325 to -276..	--	--	--	--	--	--	--	--
-275 to -226..	--	--	--	--	0.8	--	--	--
-225 to -176..	--	1.8	1.3	--	2.4	.5	--	.3
-175 to -126..	--	1.9	.4	2.2	5.6	3.1	0.4	3.2
-125 to -76...	6.5	18.2	8.9	8.6	12.9	8.8	2.9	12.0
-75 to -26...	19.3	16.4	20.9	29.0	16.9	23.2	20.6	35.4
-25 to +24...	38.7	27.2	32.9	41.9	23.5	29.9	49.6	30.4
25 to 74...	12.9	16.4	16.9	11.8	18.5	16.5	17.6	8.5
75 to 124...	12.9	--	10.2	5.4	12.9	12.9	7.6	5.0
125 to 174...	9.7	9.1	6.7	1.1	6.5	2.1	1.3	1.0
175 to 224...	--	3.6	.9	--	--	.5	--	1.7
225 to 274...	--	3.6	.5	--	--	1.0	--	1.0
275 to 324...	--	--	--	--	--	--	--	.7
325 to 374...	--	1.8	.4	--	--	.5	--	--
375 to 424...	--	--	--	--	--	--	--	.3
425 to 474...	--	--	--	--	--	--	--	.3
Total.......	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

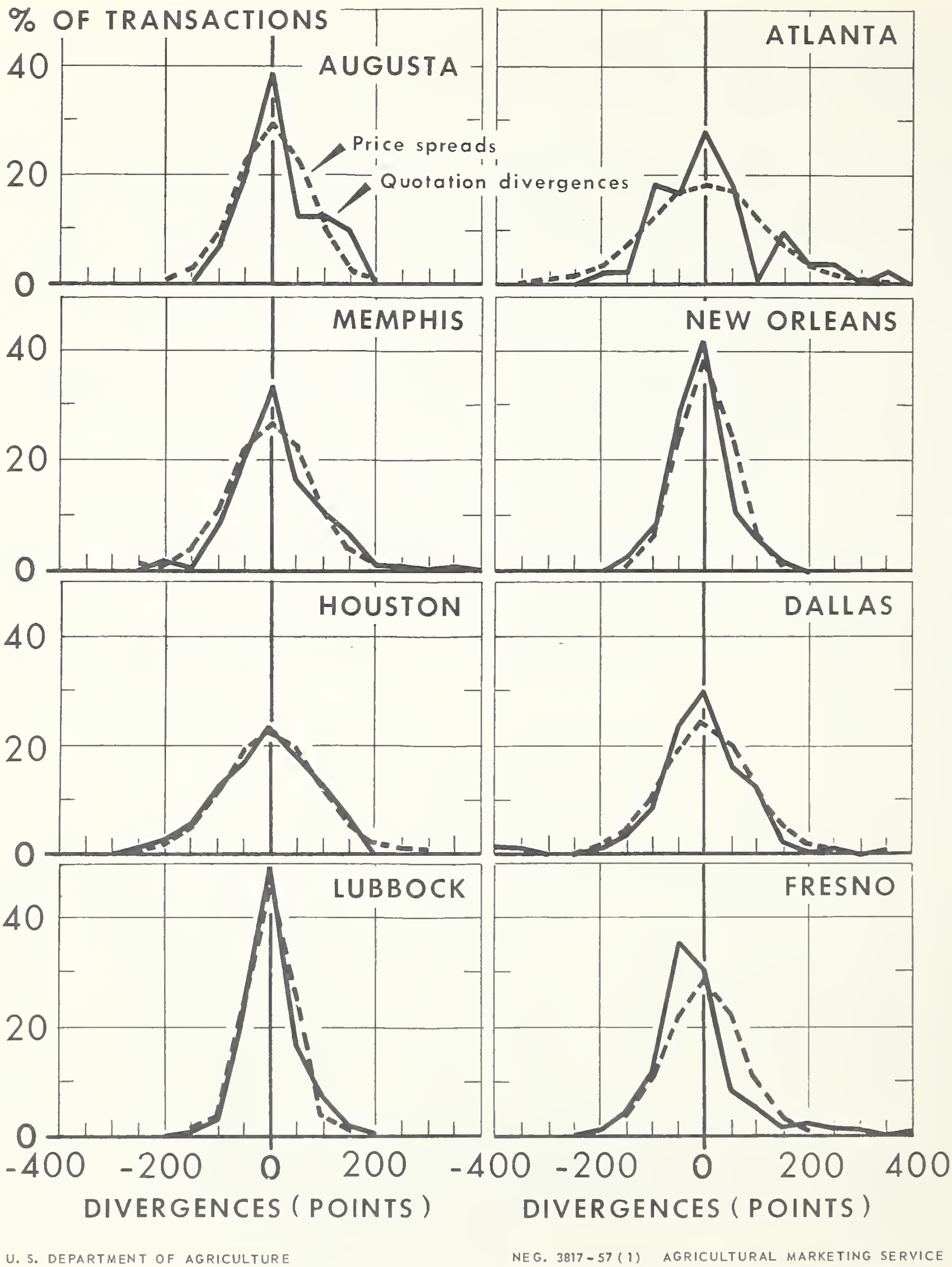

Figure 1.--Percentage distributions of divergences of market quotations from prices paid for selected lots of mixed-quality cotton by firms in 8 designated markets, and fitted normal distributions of within-period spreads among prices, season 1953-54.

Prices were dispersed rather widely at Atlanta, Dallas, Houston, and Fresno. At both Atlanta and Houston, prices of slightly more than 40 percent of the lots diverged from quotations by more than 75 points. Only about 26 and 30 percent of lots in the Fresno and Dallas markets, respectively, differed in price from the quotations by more than ±75 points but those of a few lots varied widely--occasionally as much as 400 points.

The largest market--Memphis--occupied an in-between position. There was a rather wide overall scatter of prices, but about 71 percent of lots were within a ±75 point range of the quotations.

Except for Fresno, markets with the wider dispersions of actual prices experienced relatively stable price-quotation relationships and the wide ranges in divergences were due to various market factors such as size of lots, market positions of traders, and differing opinions as to quality, character, and the like. In addition to the influence of these characteristic market factors, the wide scatter of prices at Fresno was accentuated by a rather radical shift in the level of quotations during the course of the season.

For some markets the distribution curves were skewed in a manner indicating that more lots were priced below than above the quotations. For the most part, this was a result of the lower prices received for lots of small size, particularly 10 bales or less, in contrast to lots of 50 bales or more.

Distributions of price divergences present a ready picture of the overall quality of the quotation service when compared with fitted distributions of prices for each market. The dotted lines in figure 1 illustrate what the distribution of prices would have been in each market area if the quotations committees had been able to come up with a perfect quotation during each of the three study periods, and if prices had been distributed "normally" about their averages. In every market but Fresno, spreads among actual prices closely approximated the spreads among divergences, indicating that in 7 of the 8 market areas the quotations committees accurately reflected prices in general.

Price divergence distributions do not, however, allow appraisal of the stability of the quotations during the course of the season. Also, they cast no light on the extent to which committees were faced with unlike problems resulting from volumes of trading, sizes of lots, and other market factors.

Augusta

For the season as a whole, the average divergence (spread between quoted prices and actual prices paid) at the Augusta market was +21 points (table 3). This meant that quotations in Augusta averaged 21 points higher than prices dealers paid for those mixed-quality lots that were available for inspection during the three periodic visits. This seasonal average divergence was the highest found at any of the eight selected markets.

Table 3.--Divergence of market quotations from prices paid for selected mixed-quality lots of cotton by representative firms, by period, Augusta, Ga., season of 1953-54

Period	Lots	Average divergence	Standard deviation	Relative divergence
	Number	Points	Points	"t" ratio
Early season......	17	+22	±51	1.7
Midseason.........	6	+76	±61	2.8 *
Late season.......	8	-22	±84	.7
All periods.....	31	+21	±69	1.7

* = Statistically significant (5 percent level).

Divergences for the three separate periods revealed varying conditions. In early season, quotations were 22 points higher than prices. During the late-season period the reverse condition existed, with quotations averaging 22 points lower than prices. At midseason, spreads widened appreciably to an average of +76 points.

From the standpoint of absolutely fitting quotations to prices, it might appear that the committee at Augusta performed less satisfactorily than those at other markets included in the study. The accuracy of any set of quotations, however, depends in part upon the volume of trading and price consistency in the market area. For these reasons, quotation accuracy at each market has been evaluated in terms of the relative divergences ("t" values) associated with the sample lots.

Although actual prices at Augusta moved within narrower ranges than those at 5 of the selected markets, as indicated by a standard deviation of ±69 points for the season, the committee was faced with a relatively small volume of trading, which was reflected in the small number of lots available for sampling. In the other markets, trading was more active, according to sales reported for the season. Volumes of cotton handled were 6 times greater at Lubbock, about 10 times larger at Dallas, and approximately 25 times greater at Memphis than at Augusta.

The relative divergence ("t" value) of 1.7 for the season demonstrated that the committee in Augusta averaged out in a comparatively satisfactory and accurate manner during the season as a whole. The relative divergence of 2.8 for the quotations in midseason indicated a probable bias at that time.

The merit of relative divergences in assessing the degree to which quotations accurately represented prices was illustrated by a comparison of "t" values for the early and late season periods at Augusta, when in both instances quotations differed from actual prices by 22 points on the average. The early season relative divergence of 1.7 as contrasted to 0.7 in late season showed that while quotations in both periods were satisfactory, the early season quotations, considering the larger volume of trading and smaller price spreads, represented a less skillful appraisal of prices than that in the final period under more adverse conditions.

The quotation service in the Augusta area must be rated as fairly good since the relative divergences associated with the sample lots gave an indication of probable bias in quotations only during the midseason period.

Lot size had little influence on prices paid for mixed-quality lots of cotton in the Augusta area during the 1953-54 season (table 4). There was a slight tendency for prices to increase up to lot size 51 to 100 bales, but the lower prices paid for the largest lots reversed this trend. Spreads in prices, as measured by the standard deviations, did not differ greatly by lot-size group, contrary to a tendency found in most markets where prices of small lots fluctuated much more widely than those of large lots.

Table 4.--Divergence of market quotations from prices paid for selected mixed-quality lots of cotton by representative firms, by lot size, Augusta, Ga., season of 1953-54

Lot size	Lots	Average divergence	Standard deviation
	Number	Points	Points
2 to 10 bales	11	+37	±56
11 to 50 bales	11	+13	±85
51 to 100 bales	4	+5	±76
Over 100 bales	5	+15	±65
All lots	31	+21	±69

Atlanta

On the average for the season, quotations at Atlanta were 13 points higher than prices paid for lots available for study (table 5). According to direct comparisons, quotations at Atlanta conformed more closely to actual prices than did those at two other markets studied, were approximately comparable to the spread at another market, and were wider of the mark than results at four markets.

The relationship between quotations and prices at Atlanta shifted rather radically during various periods of the season. In the early portion of the season quotations averaged 15 points lower than prices but during midseason quotations were 55 points higher, on the average. During this midseason period, however, when quotations appeared to be out of line with prices to a sizable degree, prices paid for cotton in Atlanta varied more widely than at any other market during any particular price period of the season. At Atlanta, in midseason, prices for about one-third of lots differed from the average price paid by ±143 points or more.

Table 5.--Divergence of market quotations from prices paid for selected mixed-quality lots of cotton by representative firms, by period, Atlanta, Ga., season of 1953-54

Period	Lots	Average divergence	Standard deviation	Relative divergence
	Number	Points	Points	"t" ratio
Early season......	29	-15	±94	0.8
Midseason.........	16	+55	±142	1.5
Late season.......	10	+26	±58	1.3
All lots........	55	+13	±108	0.9

The committee at Atlanta was faced with two handicaps throughout the season--one being the wide scatter in prices paid for cotton of similar quality, and the other the comparatively small volume of sales. Prices paid for similar qualities of cotton were more erratic and wider in range than those at any other market, the standard deviation of prices, ±108 points, being the largest observed at any of the eight markets under study. Although total volume of sales at Atlanta exceeded that at Augusta, it was much smaller than that at the majority of markets in the study.

After allowances were made for difficulties faced by the quotations committee at Atlanta, the relative divergence value of 0.9 for the season indicated that the committee functioned in an effective manner and with highly satisfactory accuracy. In fact, even during midseason when quotations were appreciably different than actual prices of the sample lots, the committee can be rated as having performed satisfactorily in determining quotations to best fit the diversified pattern of prices then being paid, since no evidence of bias in the quotations was indicated by the data.

A factor contributing to the wide dispersion in prices at Atlanta was the practice of varying prices according to size of lots. In Atlanta, on the

whole, the larger the lot the higher was the relative price. 5/ Lots of 10 bales or less sold at a price disadvantage of 165 points as compared with lots of more than 100 bales (table 6). Furthermore, the range in prices paid for small lots of 2 to 10 bales was substantially greater than that for larger lots. This, plus the differential pricing of cotton according to lot size, caused the large overall price scatter in the market.

Table 6.--Divergence of market quotations from prices paid for selected mixed-quality lots of cotton by representative firms, by lot size, Atlanta, Ga., season of 1953-54

Lot size	Lots	Average divergence	Standard deviation
	Number	Points	Points
2 to 10 bales..........	23	+62	±130
11 to 50 bales.........	24	-14	±71
51 to 100 bales........	5	-19	±61
Over 100 bales.........	3	-103	±88
All lots.............	55	+13	±108

Memphis

At the Memphis market during the 1953-54 season, quotations averaged 9 points higher than actual prices paid for mixed-quality lots (table 7). From the standpoint of conformance of quotations with prices, the Memphis market was in an in-between position with a seasonal average divergence that was wider than those found at Dallas, Lubbock, and Houston but narrower than those at New Orleans, Atlanta, Fresno, and Augusta.

The discrepancy between quotations and prices was not particularly large at any portion of the season, ranging from +17 points in midseason to -12 points in late season. Memphis had by far the largest volume of sales of any market in the Belt, but in spite of the high rate of market activity, the prices for lots of similar quality moved within narrower ranges than those at 4 of the other 7 markets studied.

5/ Analysis of variance indicated statistically significant differences (5 percent level) between prices paid for lots of varying sizes.

Table 7.--Divergences of market quotations from prices paid for selected mixed-quality lots of cotton by representative firms, by period, Memphis, Tenn., season of 1953-54

Period	Lots	Average divergence	Standard deviation	Relative divergence
	Number	Points	Points	"t" ratio
Early season.....	74	+11	±54	1.7
Midseason........	106	+17	±86	2.0*
Late season......	46	-12	±84	1.0
All lots.......	226	+9	±76	1.8

*=Statistically significant (5 percent level).

With this favorable combination of a moderate scatter in prices and a relatively large number of transactions as a guide during all periods of the season, the Memphis committee had a greater opportunity to develop accurate quotations than did several other committees. Appraised in terms of relative divergences, quotations accurately reflected spot prices during both early and late season periods. During midseason, the sample lot divergence of +17 points yielded a relative divergence of 2.0 which indicated a probable upward bias in quotations during that period. For the season as a whole, however, quotations averaged out with prices and the overall service of the committee was very satisfactory.

Prices paid for cotton of similar quality tended to increase by lot size ranging from 27 points below quotations for lots of 10 bales or less, up to 11 points above quotations for lots of more than 100 bales, a spread of 38 points (table 8). Such variations in prices paid for lots of varying sizes were not consistent during some parts of the season and may have been more apparent than real. According to statistical tests, these price variations were not significant. Prices of small lots, however, fluctuated much more widely than those of larger lots as indicated by the standard deviations of price spreads which were about twice as large for lots of 2 to 10 bales as for those including more than 50 bales.

Table 8.--Divergence of market quotations from prices paid for selected mixed-quality lots of cotton by representative firms, by lot size, Memphis, Tenn., season of 1953-54

Lot size	Lots	Average divergence	Standard deviation
	Number	Points	Points
2 to 10 bales..........	48	+27	±103
11 to 50 bales..........	109	+9	±75
51 to 100 bales.........	42	+5	±51
Over 100 bales..........	27	-11	±54
All lots..............	226	+9	±76

New Orleans

The seasonal average divergence between quotations and prices at New Orleans averaged -12 points (table 9). This divergence was exceeded at 3 markets and bettered at 4 markets. Actually, quotations at New Orleans likely would have conformed as closely to prices as at any other market except for an early-season situation where quotations averaged 33 points below prices being paid for mixed lots. During both the mid- and late portions of the season, when quotations reflected prices with great accuracy, average divergences were only +4 and -7 points.

Table 9.--Divergence of market quotations from prices paid for selected mixed-quality lots of cotton by representative firms, by period, New Orleans, La., season of 1953-54

Period	Lots	Average divergence	Standard deviation	Relative divergence
	Number	Points	Points	"t" ratio
Early season.....	32	-33	±44	4.2**
Midseason........	33	+4	±42	.5
Late season......	28	-7	±67	.5
All lots.......	93	-12	±54	2.1*

*=Statistically significant (5 percent level); **=statistically significant (1 percent level)

The volume of spot cotton traded at New Orleans in 1953-54 exceeded that at Augusta and Atlanta but was much smaller than sales in the other five markets studied. Although this imposed a handicap on the committee, the spread in prices for lots of similar quality was relatively narrow, smaller ranges being found only at Lubbock.

During the early-season period, when quotations were appreciably out of line with prices, cotton was being handled in volume and prices moved within comparatively narrow ranges. This should have permitted the committee to quote prices accurately, but the relative divergence of 4.2 indicated a strong probability of bias in quotations. On the other hand, the sensitive and accurate reaction of quotations to prices during the major part of the season was confirmed by a relative divergence of 0.5 in both the mid- and late-season periods. The relative divergence of 2.1 for the season as a whole, which reflected the early-season bias, would be termed borderline as to degree of accuracy.

Small lots in the New Orleans area did not sell at a price disadvantage. Lots of 10 bales or less sold at about the same prices as lots of 51 to 100 bales (table 10). Prices for the smaller lots, however, did vary much more widely from lot-to-lot than was the case for the larger-sized lots. Prices paid for lots of 100 bales or more were highly concentrated about the average, with a standard deviaiton of only ±19 points. The scatter of prices among lots of 10 bales or less was about four times as great.

Table 10.--Divergence of market quotations from prices paid for selected mixed-quality lots of cotton by representative firms, by lot size, New Orleans, La., season of 1953-54

Lot size	Lots	Average divergence	Standard deviation
	Number	Points	Points
2 to 10 bales	27	-7	±71
11 to 50 bales	42	-16	±48
51 to 100 bales	14	-6	±53
Over 100 bales	10	-17	±19
All lots	93	-12	±54

Houston

Price quotations at the Houston market differed on the average by only 6 points from actual prices paid for mixed lots included in the study during the 1953-54 season (table 11). In the early part of the season quotations

and prices were separated only by a 2-point margin but in midseason quotations averaged 37 points lower than prices. In the late period, quotations shifted and were 15 points higher than prices.

Table 11.--Divergence of market quotations from prices paid for selected mixed-quality lots of cotton by representative firms, by period, Houston Tex., season of 1953-54

Period	Lots	Average divergence	Standard deviation	Relative divergence
	Number	Points	Points	"t" ratio
Early season....	56	-2	±76	0.2
Midseason.......	32	-37	+111	1.9
Late season.....	36	+15	±72	1.2
All lots......	124	-6	±87	.8

From the standpoint of volume, the Houston market was about fourth in rank among the eight markets but was exceeded appreciably in cotton handled only by Memphis. In all three periods studied, prices paid for lots of similar quality at Houston were widely scattered; more so, in fact, than at any other market except Atlanta. As measured in terms of relative divergences of the sample lots, the committee at Houston functioned in a highly satisfactory manner for the season as a whole and during each of the three periods of study. Spreads between quotations and prices paid for sample lots of cotton were particularly wide during midseason when the average divergence was a sizable -37 points. The relative divergence of 1.9 during this one period, however, gave no evidence of bias in the quotations.

An interesting comparison may be made between the early-season divergence of -33 points at New Orleans, which was considered to show definite bias, and the satisfactory midseason divergence of -37 points at Houston. This seeming inconsistency is explained by the ranges in prices at the two markets. Prices paid for similar qualities of cotton (divergences) varied by 2-1/2 times as much in the Houston area as in the New Orleans area during the periods in question, thereby reducing the chances of the Houston committee for effectively pinpointing quotations.

In terms of relative prices paid for lots of varying sizes, the situation at Houston was unique in that smaller lots brought more favorable prices than larger lots. Actually, for the season as a whole, lots of 10 bales or less enjoyed a 36-point price advantage over lots of more than 100 bales (table 12). Although such a spread could be attributed to fluctuations in sample size alone, brokers at Houston, because of the export situation, frequently did buy small lots as "fill-ins" to meet shipping deadlines at prices advantageous

to sellers. As in most areas, the scatter of prices for small-lot sales (2 to 10 bales) was appreciably greater than those for lots of larger sizes.

Table 12.--Divergence of market quotations from prices paid for selected mixed-quality lots of cotton by representative firms, by lot size, Houston, Tex., season of 1953-54

Lot size	Lots	Average divergence	Standard deviation
	Number	Points	Points
2 to 10 bales..........	8	-28	±122
11 to 50 bales.........	68	-1	±78
51 to 100 bales........	35	-15	±98
Over 100 bales.........	13	+8	±82
All lots.............	124	-6	±87

Dallas

Dallas price quotations and prices paid in the market agreed almost exactly over the course of the season, the divergence being only -1 point on the average (table 13). This was the best overall record among the eight markets selected for study. By periods there was a moderate degree of variation, the average divergences being -9 points, -7 points, and +15 points for the early, middle, and late portions of the season respectively.

Table 13.--Divergence of market quotations from prices paid for selected mixed-quality lots of cotton by representative firms, by period, Dallas, Tex., season of 1953-54

Period	Lots	Average divergence	Standard deviation	Relative divergence
	Number	Points	Points	"t" ratio
Early season.....	72	-9	±68	1.1
Midseason........	77	-7	±79	.8
Late season......	56	+18	+106	1.3
All lots.......	205	-1	±84	.2

The market at Dallas is one of the larger spot markets in the Belt in volume, usually being second in rank. During the season of study, variations in prices of lots of similar quality were sizable and, in the late-season period, prices of more than one-third of all lots traded differed by more than 100 points from the average level. In all periods, however, relative divergences of 1.3 or lower indicated that the committee functioned in a very efficient manner in quoting the market. The relative divergence of 0.2 for the season as a whole was the most favorable at any of the selected study markets and the quotations service would warrant a rating of excellent.

Firms buying cotton at Dallas, as at most of the markets, paid appreciably less for cotton in lots of small size than for the same qualities of cotton in bigger lots. 6/ Prices for lots of 2 to 10 bales averaged 42 points less than quotations and those for lots of 101 bales or more were 17 points higher than quotations, a net discount of 59 points for the small lots (table 14). Committee members obviously must have paid considerable attention to price variations between lots in order to have achieved such a good balance between quotations and prices.

Table 14.--Divergence of market quotations from prices paid for selected mixed-quality lots of cotton by representative firms, by lot size, Dallas, Tex., season of 1953-54

Lot size	Lots	Average divergence	Standard deviation
	Number	Points	Points
2 to 10 bales	8	+42	±72
11 to 50 bales	107	-4	±94
51 to 100 bales	55	+9	±79
Over 100 bales	35	-17	±56
All lots	205	-1	±84

Lubbock

At Lubbock the average spread between quotations and prices paid was only +2 points in the 1953-54 season (table 15). This close accord between quoted and actual prices gained the Lubbock committee second rank in overall performance among the eight markets in the study.

6/ Analysis of variance indicated statistically significant differences (5 percent level) between prices paid for lots of varying sizes.

Table 15.--Divergence of market quotations from prices paid for selected mixed-quality lots of cotton by representative firms, by period, Lubbock, Tex., season of 1953-54

Period	Lots	Average divergence	Standard deviation	Relative divergence
	Number	Points	Points	"t" ratio
Early season....	68	-3	±29	0.9
Midseason.......	92	-9	±54	1.6
Late season.....	78	+20	±47	3.7**
All lots......	238	+2	±47	0.6

**=Statistically significant (1 percent level).

This splendid performance for the season as a whole, however, included one period when quotations were somewhat out of line with prices. During the late-season period, quotations were 20 points higher than prices. The relative divergence of 3.7 would indicate that quotations were too high under the circumstances.

All through the season, including the late period, the scatter in prices among lots of like quality was narrower at Lubbock than at the other seven markets. Also, Lubbock was a very active market with volume of trading several times greater than at Augusta, Atlanta, and New Orleans and only slightly smaller than at Dallas, Fresno, and Houston.

The relatively greater stability of prices paid for mixed lots at Lubbock probably resulted from the widespread use of the Government Smith-Doxey class as a basis of trading. Local firms both bought and resold lots on the same identical "green card" classification which removed one risk factor and provided a stabilizing influence.

As at several other markets, the task of the committee was complicated by the practice of varying prices for the same qualities of cotton according to sizes of lots. 7/ While lots of 10 bales or less sold at 24 points under the quotations, lots of more than 50 bales sold for about 13 points above the quotations on the average (table 16). One unusual feature at Lubbock was that the scatter of prices was very similar for lots of the various sizes. In most other markets, the smaller lots not only sold at a price disadvantage but also at more erratic prices.

7/ Analysis of variance indicated highly significant differences (1 percent level) between prices paid for lots of varying sizes.

Table 16.--Divergence of market quotations from prices paid for selected mixed-quality lots of cotton by representative firms, by lot size, Lubbock, Tex., season of 1953-54

Lot size	Lots	Average divergence	Standard deviation
	Number	Points	Points
2 to 10 bales..........	55	+24	±52
11 to 50 bales.........	114	+2	±39
51 to 100 bales........	47	-14	±50
Over 100 bales.........	22	-13	±50
All lots.............	238	+2	±47

Difficulty experienced by the Lubbock committee in quoting late-season sales in as accurate a manner as during most of the season probably resulted from the situation illustrated by a breakdown of the late-season data as follows:

Lot size	Lots (Number)	Average divergence (Points)
2 to 10 bales	32	+48
11 to 50 bales	33	+8
51 to 100 bales	6	-30
More than 100 bales	7	-7
	78	+20

Lots of 10 bales or less were discounted heavily in the late-season trading, bringing, after adjustment for quality, 40 points less than prices paid for lots of 11 to 50 bales in size and 78 points less than lots of 51 to 100 bales. About 40 percent of the lots sold in the late-season period consisted of those from 2 to 10 bales according to the sample data. Giving too little emphasis to such small lots in estimating the average of all prices obviously would result in an upward bias in a quotation.

Fresno

For the season as a whole, quotations at Fresno averaged 15 points less than prices paid for mixed lots (table 17). At no particular sample period, however, were quotations well in line with prices. In the early portion of the season, prices were relatively stable at Fresno but quoted prices were 52 points below average prices. In midseason some slight improvement was made but quotations were still 38 points under prices on the average.

In late season there was a decided shift in the relation of the quotations to lot prices with quotations actually being higher than prices paid by 18 points. As measured by relative divergences, quotations did not accurately reflect prices in any period nor for the season as a whole but the degree of bias tended to decrease as the season progressed.

Table 17.--Divergence of market quotations from prices paid for selected mixed-quality lots of cotton by representative firms, by period, Fresno, Calif., season of 1953-54

Period	Lots	Average divergence	Standard deviation	Relative divergence
	Number	Points	Points	"t" ratio
Early season....	104	-52	±37	14.4**
Midseason.......	113	-38	±53	7.6**
Late season.....	195	+18	±100	2.5*
All lots......	412	-15	±83	3.7**

**=Statistically significant (1 percent level); *=statistically significant (5 percent level).

For the season as a whole, higher prices were paid for cotton grouped into larger lots. 8/ Lots of 10 bales or less sold at an 89-point price disadvantage as compared with lots of more than 100 bales (table 18). Likewise, the smaller lots brought more widely scattered prices, with the dispersion of prices for lots of 10 bales or less being almost twice as great as that for lots of more than 100 bales.

Table 18.--Divergence of market quotations from prices paid for selected mixed-quality lots of cotton by representative firms, by lot size, Fresno, Calif., season of 1953-54

Lot size	Lots	Average divergence	Standard deviation
	Number	Points	Points
2 to 10 bales..........	113	+39	±91
11 to 50 bales.........	162	-28	±80
51 to 100 bales........	68	-38	±54
Over 100 bales.........	69	-50	±52
All lots............	412	-15	±83

8/ Analysis of variance indicated highly significant variations (1 percent level) between prices paid for lots of varying sizes.

The Fresno market, in some respects, operated under conditions similar to those at Lubbock. The market enjoyed a large volume of trading which was conducted almost entirely in terms of the Smith-Doxey classification. Prices at Fresno, however, were much less consistent than at Lubbock, due primarily to fluctuations in small-lot prices, although the scatter of prices was less pronounced than at Atlanta and was similar to those at Dallas and Houston. Probably the main factor influencing the somewhat erratic and biased level of quotations at Fresno was the fact that this was a newly designated market at the time of the study during the 1953-54 season. The quotations committee apparently had not developed procedures and methods for handling all of the difficult problems inherent in servicing the quotations.

The committee apparently was handicapped, also, to a greater extent than that at any of the other markets studied, by the use of 15/16-inch staple as the base for quotations. No cotton of normal character of that staple was produced in the Fresno market area. Indications are that the quotations have improved greatly at Fresno since that time and likely will be benefited further by the recent adoption of 1-inch staple as the base length.

Observations Regarding Accuracy of Quotations

According to the measures used, quotations for 7 of the 8 markets during the periods of study should be considered generally satisfactory. Markets that most consistently met the criteria selected for evaluating the conformance of quotations to market prices included Atlanta, Dallas, and Houston. For the season as a whole, Augusta, Lubbock, Memphis, and New Orleans also showed satisfactory results, but in those markets some difficulties in quoting prices were experienced in one of the three periods of the season. Quotations during the season of study were consistently out of line with actual prices at Fresno because of problems outlined above.

Such above observations are in no way intended to indicate any permanent order or rank between markets as to relative proficiency in establishing spot quotations. This study applied to only one season and the set of conditions in existence at that time. Another study in another season likely would show a considerable shift in measured performance among the quotations committees.

Aside from confirming the overall reliability of the spot cotton quotations, the study provided an insight into the problems committees faced in quoting a market. Prices paid for any one quality of cotton in a particular market at any period of the season show considerable variation about the average level of prices. When, however, price variability reaches proportions where one-third of lots differ in price from the average by more than ±100 points, as was the case during one period at Dallas, Fresno, and Houston, and during the entire season at Atlanta, the severity of the task faced by committees in arriving at accurate estimates of prices is better appreciated. This variability is partly due to the fact that small-sized lots of cotton logically bring somewhat lower prices than large lots of cotton of similar quality, as an offset to the extra expense of physical assembling and added bookkeeping

involved in the case of the smaller lots. When, however, lots of 10 bales or less sell at price disadvantages of more than 76 points compared to similar qualities of cotton in 100-bale lots as at Fresno, Dallas, and Atlanta, special care is required by committees in evaluating the available price information.

The wide variations in the volumes of cotton handled between markets follow a rather fixed annual pattern. Committees at Augusta, Atlanta, and New Orleans, among the eight markets studied, are at a continual disadvantage when establishing quotations due to much smaller volumes of cotton handled.

TRADE SUGGESTIONS FOR IMPROVING ACCURACY OF QUOTATIONS

Recommendations of Quotations Committees

Toward the close of the season of study, representatives of the Department met with the quotations committees in each of the 14 designated markets to obtain information on operating methods and to request suggestions from the committees on how to improve the quotations service. In general, the committees expressed favorable opinions regarding the Department's regulations and procedures pertaining to the quotations service. Seven of the committees stated that they had no changes to suggest regarding any phases of the quotations work. At the other seven markets, the committees made the following suggestions:

"Quotations should be issued only for qualities normally handled in our market." (This recommendation or one of like import was specifically made by four committees and in several others this item was presented as a serious problem.)

"Change base quality to Middling 1-1/16 inches." (Recommended by two committees).

"Change base quality to Middling 1." (Recommended by three committees).

"Mixed-lot transactions alone are not adequate base for establishing basis or differences. Use even-running lot transactions for supplementary information." (Recommended by one committee).

"Confine quotations to white and spotted grades." (Recommended by one committee).

"Differences for settlement of futures contracts should be based on 10 markets instead of 5 eastern or 5 western as at present." (Recommended by one committee).

"Remove designation status from 4 smaller markets." (Recommended by one committee).

Suggestions from Members of Cotton Trade

In the course of the survey more than 200 merchants and brokers in the 14 markets were interviewed. In response to requests for comments on improving the service, 55 percent of the persons interviewed stated that they had no suggestions to offer. Among this group, many explained that they considered the quotations to be satisfactory and that so far as they knew, no change was needed.

Suggestions principally involved only two or three issues. About 19 percent of those interviewed advocated a change in the base quality. Practically all of those making this suggestion felt that 15/16-inch staple was too short to fit the crop now produced in their respective areas. At Lubbock a few stated a change to a shorter length would be more suitable for that market. More interest was shown at Fresno for changing the base quality to a longer length than at any other market; but the majority of those interviewed at New Orleans and Greenwood also expressed themselves as favoring a change to a longer staple.

At most of the markets some individuals strongly recommended that quotations at each market be limited to the qualities normally handled in the particular market. Some thought it inadvisable for a quotations committee to attempt to quote prices on qualities that were never handled in their market, and about 18 percent of those interviewed so expressed themselves. Others thought it advantageous for all markets to have a part in the development of all quotations used in national averages, such as premiums and discounts for Government loans and for the settlement of futures contracts.

Other suggestions, including some made by only one or two persons, were:

"Quotations could be improved by a higher degree of standardization in classing. Classing is too slipshod and inexact. Laboratory measuring instruments should be utilized to achieve greater precision in classing."

"Eliminate four small markets."

"Need more participation in quotations work by officials of exchange."

"Quote in terms of futures instead of a base grade."

"Include quotations for some of the split grades."

"Put micronaire limits applicable to each quality quoted."

"A government representative in each market should be responsible for the quotations."

"Regular and frequent meetings of the quotations committee should be required."

"Committees should provide for and encourage non-member presentation of facts bearing on accuracy of quotations."

"Closer supervision by United States Department of Agriculture is needed."

"Fix premiums and discounts by quarterly periods."

"Weight differences in each market by sales volume of the market."

PROGRESS IN AND POSSIBILITIES FOR MODIFICATION OF SERVICE

For several years prior to this study, support has been building up in trade circles to increase the base staple of futures contracts from 15/16-inch to a longer length which, in turn, would effect a like shift in the base of the quotations. Therefore, the most common suggestion by shippers and brokers during the survey in the summer of 1954 toward improving the quotations was this matter of an upward shift in base staple. Trade support for such a change continued to strengthen, resulting in action by the futures exchanges to establish the base quality of contracts at Middling 1-inch beginning with maturity of the October 1956 contracts. In line with this development, the Department substituted this grade and staple as the base quality of spot quotations effective August 1, 1956.

Modifications in futures exchange rules also included provisions that cotton tendered on contract must have a micronaire value of 3.5 or better. At a meeting in April 1956, where representatives of the Department met with those of the designated markets, futures exchanges, and cotton trade associations, an agreement of understanding was reached whereby, while quotations would continue to apply to cottons of normal character, quotations for cottons of tenderable grades would in no case relate to cottons having a micronaire reading of less than 3.5. This provision partly satisfied one recommendation offered at the time of the study to establish micronaire limits applicable to each quality quoted. In addition, the Department agreed to attempt collection of price information for cotton having a micronaire of less than 3.5 with the view of publishing such prices if and when practicable.

Another frequent recommendation at the time of the study was that quotations at a market should be limited to qualities normally handled at that particular market. Following the 1954 study, the Department received a similar proposal from the Spot Quotations Committee of the American Cotton Shippers Association. At the April 1956 meeting this proposal was the subject of considerable discussion. Final majority decision of the trade, however, was that the best interests of the quotations service would be served if all markets continued to quote all grades in the existing range of staples.

In fact, the final outcome tended to broaden rather than restrict the range of qualities quoted by several markets.

Among other conclusions reached at the April 1956 meeting which had a bearing on proposals advance by the trade in 1954 were: (1) Decision against quoting prices for Light Spotted cotton; (2) recommendation that each quotations committee consist of 3 or 5 members and meet at least once each week to review price differences; (3) agreement that in any designated market where a Department representative is available for the purpose, such representative, when possible, will assist in assembling price information for consideration by the Committee; and (4) a proposal that meetings of agreement between exchange and trade representatives and the Department be held at more frequent intervals than in the past.

Some of the proposals made in 1954 by only a few firms, such as the use of fixed premiums and discounts by quarterly periods and the transfer of full responsibility for, and actual compilation of, these quotations to the Department, have not attracted sufficient interest on the part of the trade to effect such changes. A matter of some more frequent mention in 1954--the elimination of the smaller of the 14 designated markets--was suggested prior to this study but developed effective opposition.

Since the expressions of the trade were recorded in 1954, cotton circles and the Department, either separately or jointly, have resolved most of the regulatory and procedural problems apparent in the servicing of the central market spot quotations. The consensus is that such changes and decisions will improve the basic framework of the quotations.

Changes in regulations, however, cannot eliminate or even greatly reduce the prime difficulty faced by committees--the wide variability in prices paid for cotton of the same quality at the same market on the same day. Firms which are "short" with shipping deadlines close at hand now and in the future will buy in the needed qualities and volume at whatever price is required. Classing of the same lots of cotton by different classers under different conditions on different sets of samples obviously will provide a favorable climate for some differences of opinion. Evaluation of cotton character in terms of fiber tests is increasing but differences in test results have not been stabilized as yet into an accepted scale of price values.

Apparently the most fruitful possibility for smoothing out quotations to better fit prices is by closer attention to relations between official quotations and the price of each lot purchased in the market. In several cases in the study, when committees got out of line temporarily, small-size lots were selling at sizable discounts and a shift had occurred in composition of sales whereby the small-size lots had become a much greater proportion of the total volume of sales. This situation was prevalent especially toward the end of the season. Failure to give proper weight to the lower prices being paid for this increased volume of small lots tended to cause the committees to overquote the market.